cumulative analysis as applied to future Reclamation projects and provide additional comments to Reclamation.

- Some of the impact indicators and significance criteria are too often based only on special-status species, alone. Some environmental alterations that are seemingly substantial were determined to be insignificant under the significance criteria used, but other potential impacts were not addressed. For example, upper Sacramento River flows reduced by up to 9.4% in the cumulative condition is considered less than significant, based on winter-run chinook salmon biological opinion criteria. However, a 9.4% reduction is substantial and could adversely affect other species, such as resident fish (non-anadromous), aquatic invertebrates, amphibians, and river-associated terrestrial species. These species could be adversely affected by loss of aquatic habitat area, shaded riverine aquatic habitat, and vegetation adjacent to the river (similar to a reservoir "bathtub ring" during drawdown).

- Some significance criteria are vague, as they are open ended and subjective. These criteria state that sufficient magnitude of effect must occur to be significant, but the magnitude that would be sufficient is not defined. No supporting biological data is provided for some conclusions that magnitudes of effects are too small to be significant, such as cottonwood growth and maintenance, backwater recharge on the lower American River, and others. For example, flows in the lower American River of at least 2,000 cfs during the cottonwood growing season decrease under the cumulative condition by 6.4% at H Street Bridge. This is determined by the analysis to be "less than significant," but no data are provided to support that conclusion, or what percent decrease would be considered significant. Similar conclusions are made for riparian habitats on other streams and for other impacts in the analysis, and possibly other non-riparian related indicators. The Service is continuing review of impacts to lower American River cottonwood habitat and associated wildlife species due to changes in instream flows, and we will provide further comments to Reclamation when review is completed.

- Several "potentially significant" impacts are identified in the cumulative analysis, including fall-run chinook salmon rearing habitat in lower American River due to reduced flow and increased temperature, splittail riparian habitat loss in the lower American River due to reduced flow, winter-run chinook salmon early lifestage survival in upper Sacramento River due to increased temperature, long-term average water temperatures in lower Sacramento River, shifts in X2 due to reduced Delta outflow, long-term average flow reductions in lower Feather River, and service area effects. However, it is not clear what contribution Reclamation's American River-related actions have made to these cumulative impacts because these actions are combined with non-American River-related actions contained in the cumulative condition (e.g., reduced Trinity River imports, increased demands of the State Water Project, and increased demands of the Contra Costa Water District) and only a total effect is presented in the analysis results. The Service provides recommendations on this problem below under "Programmatic View of Cumulative Actions."

L-244, pg. 5

- Related to the preceding comment, the contribution of the PCWA Project to cumulative impacts is determined by Reclamation to be "less than significant." The same could probably be concluded for impacts of other American River-related reasonably foreseeable actions in the future, which Reclamation would address using the cumulative analysis. Each Reclamation project may have impacts considered by Reclamation to be less than significant, but the sum of impacts from multiple Reclamation actions (cumulative impacts) may be significant. This raises concerns about how Reclamation would make decisions on implementing individual projects, and how mitigation needs for Reclamation-specific cumulative impacts, which are presently obscured in the analysis with other cumulative impacts, would be determined. Additional comments on this topic is provided below under "Programmatic View of Cumulative Impacts."

Mitigation of Cumulative Impacts

- As cumulative impacts due to Reclamation actions are obscured in the cumulative analysis, mitigation needs for cumulative impacts due to Reclamation actions cannot be determined. No specific mitigation or further action by Reclamation to address cumulative impacts is proposed for cumulative impacts in the present cumulative analysis. Reference is made to an Environmental Protection and Mitigation Plan that is under preparation and is to be included in the final EIS/EIR process for the PCWA Project, but this reference regards only the selected alternative and not cumulative impacts. Reclamation should be more specific in how mitigation needs will be determined and mitigation actions be planned and implemented. Confounding of the sources of cumulative impacts is one reason the Service previously recommended, during cumulative analysis planning, that Reclamation address American River actions programmatically and isolate Reclamation's portion of cumulative impacts (see further comments on this topic below under "Programmatic View of Cumulative Actions").

- It appears that the ongoing programs and activities in the Central Valley described in Appendix A of the cumulative analysis are being referenced by Reclamation as potentially mitigating for the PCWA Project and other American River-related reasonably foreseeable actions contained in the cumulative analysis. It is the Service's position that CVPIA programs for habitat conservation [e.g., Central Valley Project Conservation Program and CVPIA (b)(1) "Other"] described are intended as mitigation for past CVP impacts, and are not to be used as mitigation for new impacts, such as from new water deliveries or other new CVP actions.

- If the CALFED Bay-Delta Program will be expected to provide mitigation for proposed water diversion projects, the specific CALFED Program elements that would provide the mitigation should be identified, and the nature of the mitigation actions should be described (e.g., locations and types of action).

- If Reclamation's Central Valley Project Wetlands Program is to be considered a conservation or mitigation measure for cumulative impacts (Cumulative Analysis Appendix A), figures for wetland acreage created, restored, and enhanced by the Program should be provided as an accounting of this program's potential contribution to mitigation

5

L-244, pg. 6

of cumulative impacts. Purposes, objectives, and commitments of the program for mitigating past impacts also should be defined.

- Other conservation measures for water service areas that are part of local and regional plans are described in Appendix A of the cumulative analysis. While conservation measures and mitigation from local and regional plans are desirable, the Service does not always consider them adequate for mitigating impacts (including those related to non-special-status species) that are enabled by new Reclamation water supplies (i.e., indirect and interrelated impacts). The Service does not believe that Reclamation should rely on local and regional plans, alone, to satisfy mitigation needs related to delivery of Reclamation water. In order to define the effectiveness of local and regional mitigation/conservation plans, and determine the adequacy of these plans for service area impacts, an accounting of past and planned actions associated with these plans should be taken. Reclamation should compare past and future expected impacts in the service areas with past and planned mitigation, and make a determination of sufficiency of mitigation. Reclamation should assist locals in augmenting mitigation, as needed.

- Although the PCWA Project is part of the Water Forum Agreement, it is not clear how Reclamation will consider mitigation and conservation measures contained in the agreement. For example, is the Water Forum's Lower American River Habitat Management Element considered to adequately mitigate for Lower American River impacts, and does Reclamation support a new flow standard for the Lower American River as a mitigative measure?

Programmatic View of Cumulative Actions

- The Service believes that a cumulative analysis is necessary for assessing cumulative impacts of the American River-related reasonably foreseeable projects, but we have concerns about the project-by-project approach to decision making under NEPA, and that Reclamation has not developed a master plan for managing the multiple demands on American River water. Having considered the more than 30 American River-related reasonably foreseeable projects, the Service believes that the group of projects should be evaluated together in a programmatic Environmental Impact Statement (EIS), rather than on a project-by-project basis. We believe that the projects are interrelated and interdependent, as described below, and that, in addition to cumulative analysis of impacts, the decision making process would best be served with a programmatic EIS and programmatic Record of Decision.

- The Council on Environmental Quality states that "the preparation of an area-wide or overview EIS may be particularly useful when similar actions, viewed with other or proposed agency actions, share common timing or geography. For example, when a variety of ..... projects may be located in a single watershed, ... the overview or area-wide EIS would serve as a valuable and necessary analysis of the affected environment and the potential cumulative impacts ..... within that geographic area" (Federal Register 46:55, 18026-18038). All of the American River-related reasonably foreseeable actions are dependent on a common resource–the American River– which must be managed as a

6

whole by Reclamation's Folsom Dam and other diversion facilities in order to protect and enhance fish and wildlife resources and meet environmental standards in the lower American River and Delta.

- Another circumstance supporting the need for a programmatic EIS is that many of Reclamation's American River-related reasonably foreseeable actions were developed within a cooperative negotiation process among multiple American River water purveyors known as the Sacramento Water Forum. These projects are a part of a package produced by the Water Forum–the Water Forum Agreement– which includes linked actions based on many "quid pro quos," and can be considered a program. Diversion amounts, dry year reductions, conservation measures, and mitigation measures are all negotiated components of the Water Forum linked to many of Reclamation's American River-related reasonably foreseeable actions. For purposes of state regulatory compliance, the Water Forum developed a combined (essentially programmatic) Environmental Impact Report, which could serve as a starting point for a programmatic EIS. Implementation of negotiated agreement components would be inherent in individual actions implemented by Reclamation and require modifications to CVP operations. In this respect, Reclamation would be committing to, and implementing components of, the Water Forum Agreement when it implemented actions such as the PCWA Project, but without Programmatic consideration of cumulative impacts or program-level alternatives.

- The Service is concerned that without a programmatic EIS, Records of Decision for the individual projects would consider only the incremental contribution of the proposed action to the cumulative impact, which could result in project approval without full consideration of impacts. As described above, each project alone could result in a relatively small incremental contribution toward the cumulative impact and, therefore, each incremental impact could be considered less than significant. However, the cumulative analysis indicates some impacts are substantial and considered by Reclamation to be significant. The problem is further complicated by the pooling of Reclamation-related impacts and non-Reclamation-related impacts in the cumulative analysis' results sections, making it impossible to discern Reclamation's cumulative impacts from the others. It is unclear how Reclamation intends to consider cumulative effects of their American River-related reasonably foreseeable actions, and how mitigation needs would be determined.

  Under a programmatic EIS, all American River actions under Reclamation's purview could be considered together as a program, and the Record of Decision could consider the Reclamation-specific cumulative impacts in defining a program plan for the American River Basin, rather than making incremental management decisions based on incremental impacts. The programmatic EIS could develop alternatives to comprehensively address existing water demands and environmental conditions, potential American River actions, environmental effects, and mitigative measures. Reclamation could then produce a programmatic Record of Decision defining a holistic, ecosystem-level plan for managing the high demands being put on water resources in the American River Basin. The Record of Decision could determine whether the Water Forum Agreement, as a program, would

L-244, pg. 8

be part of Reclamation's preferred alternative for federal action, and whether Reclamation would be able to meet increased demands on the already stressed American River water resources, while fulfilling obligations to protect and enhance the American River, Sacramento River, and Delta ecosystems.

Endangered Species Act Consultation

- As the Service believes that many of the American River-related reasonably foreseeable actions are interdependent and interrelated, and that the actions must be considered and managed as a whole to protect and recover federally listed species within the area of environmental effects, we request that Reclamation enter into discussions with the Service to develop an ecosystem-based, programmatic consultation under section 7 of the ESA on the group of American River-related reasonably foreseeable actions.

Recommendations

A 1. Keep the Service informed of new information for the PCWA Project, as available, so that we can update our recommendations.

B 2. Qualitatively describe the probability, extent, intensity, and consequences of short-term adverse conditions that may harm aquatic resources due to implementation of the American River-related reasonably foreseeable actions.

C 3. Estimate threshold amounts of water diversions that would adversely impact the biological environment, as defined by impact indicators, so as to identify the maximum amount of new water that could be diverted by the American River-related reasonably foreseeable actions in the future without diminishing the environmental baselines for Delta smelt and Sacramento splittail, or adversely affecting other biological resources.

D 4. Further substantiate conclusions on significance of impacts, where necessary, by citing supporting data or scientific rationale related to the important water qualilty and flow parameters (such as X2 and instream flow) that the Service uses to determine baselines for Delta smelt and Sacramento splittail, and assess other biological resources that have relatively subjective impact conclusions (e.g., riparian vegetation effects).

E 5. Further substantiate conclusions on significance of impacts, where necessary, by citing supporting data or scientific rationale related to important environmental parameters affecting other biological resources having relatively subjective impact conclusions in the cumulative analysis (e.g., riparian vegetation effects).

F 6. Evaluate the American River-related reasonably foreseeable actions in a programmatic EIS, and develop a programmatic Record of Decision on both terrestrial and aquatic resources that isolates and considers, as a whole, the effects of Reclamation-specific cumulative impacts, as well as all other cumulative impacts, on the American River, Delta, water service areas, and other affected locations.

8

A. PCWA has agreed to do so.

B. Please refer to Master Response 3.1.14, Cumulative Impact Analysis.

C. Please refer to Master Response 3.1.14, Cumulative Impact Analysis.

D. See following page for response.

E. Please refer to Master Response 3.1.14, Cumulative Impact Analysis.

F. Please refer to Master Response 3.1.14, Cumulative Impact Analysis.

Letter 244 Responses (cont.)

Response D

The Draft EIS/EIR provides significance criteria to evaluate each potential impact. For instance, the following excerpt from Table 3.5-4 of the Draft EIS/EIR (page 3-79) describes the impact indicators and significance criteria utilized for the evaluation of the Delta resource parameters described in the comment letter.

Impact Indicator	Significance Criteria
Monthly mean Delta outflow (cfs) for all months of the year.	Decrease in Delta outflow, relative to the basis of comparison, of sufficient magnitude and frequency to adversely affect Delta fish resources over the 70-year period of record.
Monthly mean location of X2 and Delta export/inflow ratios for all months of the year, with an emphasis on the February through June period.	Change in position of X2 and Delta export/inflow ratio, relative to the basis of comparison, of sufficient magnitude and frequency to adversely affect spawning and rearing habitat and downstream transport flows over the 70-year period of record.

In addition to the criteria described in the table, the Draft EIS/EIR *Assessment Methodologies* section (page 3-70) outlines more specific standards involving the analysis of potential impacts to Delta resources. For example, changes in monthly mean Delta outflow for the 70-year period of record under the Proposed Project and the cumulative condition were determined for each month of the year and were compared to monthly mean Delta outflow under the basis of comparison. The frequency and magnitude of differences in Delta outflow were evaluated relative to life history requirements for fish species of priority management concern in the Delta. Furthermore, changes in monthly mean X2 position were determined for all months of each year, with an emphasis on the February through June period, due to the potential effects on spawning and rearing habitat and downstream transport flows for delta smelt, longfin smelt, splittail, striped bass, salmonids, and other aquatic species in the Delta.

Impacts to Delta smelt, splittail, striped bass, and other Delta fish resources were considered adverse if hydrology under the Proposed Project and the cumulative condition showed a substantial decrease in monthly mean Delta outflow, relative to hydrology under the basis of comparison, during one or more months of the February through June period, if a substantial shift in the long-term monthly mean X2 position occurred, or if Delta export/inflow ratios were increased to where allowable export limits would be exceeded.

Using the indicated significance criteria, the Draft EIS/EIR (page 3-102) and the Final EIS/EIR revisions (Chapter 3.0, Section 3.5.2.4, Impact 3.5-34: Impacts to Delta Fish Populations) describe the potential diversion-related impacts of the Proposed Project relative to the existing condition. The model outputs do not exceed the values and qualifications identified by the significance criteria. The model simulations conducted for the Action Alternatives also included conformance with X2 requirements set forth in the SWRCB Interim Water Quality Control Plan. The Delta export-to-inflow ratios under the Action Alternatives would not exceed the maximum export ratio as set by the SWRCB Interim Water Quality Control Plan. The Draft EIS/EIR deemed these impacts less than significant.

The significance criteria utilized in the American River Pump Station Draft EIS/EIR to determine potentially significant impacts to Delta fish populations is very conservative (rigorous) relative to the significance criteria utilized by resource agencies in previous documents. The USFWS, in their comment D in Letter 244, request additional potential impact significance determination substantiation regarding indicators (e.g., X2) that USFWS uses for impact evaluations. The USFWS has prepared three important, relatively recent NEPA compliance documents including the *Central Valley Project Improvement Act Draft Programmatic EIS* (1997), the *CALFED Bay-Delta Program Programmatic EIS/EIR* (1998), and the *Trinity River Mainstem Fishery Restoration Draft EIS/EIR* (1999). For each of these three documents, USFWS has utilized various significance criteria, particularly regarding evaluation of potential Delta (e.g., X2) impacts. The various approaches and significance criteria utilized in these three documents are briefly described below, for comparative purposes relative to this EIS/EIR.

Response D (cont.)

In the *Central Valley Project Improvement Act Draft Programmatic EIS* (1997), the USFWS does not definitively state significance criteria. Instead, the evaluation of potential impacts relies on qualitative narrative descriptions based on the relationship between potential CVPIA actions and potential changes to environmental conditions. These assessment relationships are used to describe the manner in which environmental conditions lead to responses by representative species (pg. IV-80). The impact analysis performed in the *CALFED Bay-Delta Program Programmatic EIS/EIR* (1998), although apparently somewhat more rigorous than the CVPIA analysis, also lacks definitive quantification of impacts to delta water quality parameters (e.g., movement in X2) and relies on qualitative and potentially subjective judgments to address potentially adverse impacts. The CVPIA significance criteria states (pg. 7.1-30) *"An effect is found to be significant if it substantially degrades aquatic ecosystem processes; substantially reduces structural characteristics of the aquatic ecosystem; substantially degrades conditions affecting or potentially affecting the abundance or range of a rare, threatened, and endangered species or a species having economic or social value; or has considerable effects when viewed with past, current, and reasonably foreseeable future projects."* Most recently, in the *Trinity River Mainstem Fishery Restoration Draft EIS/EIR* (1999), the USFWS defined quantitative significance criteria to be used in the fisheries impact analysis. The *Trinity River Mainstem Fishery Restoration Draft EIS/EIR* utilized criteria which considered impacts to Delta fisheries resources significant if the project created a *"…10 percent modeled exceedance in the ratio of Delta inflows to exports, Delta outflows, and changes in X2 position during the February through June period…over the 69-year simulation period…."* The USFWS "*judged [the 10 percent exceedance criteria] to be conservative given it would be applied over the entire analysis period"* (pg. 3-182). The USFWS Trinity River BO (pg. 30) states that the error of the model used in their analysis is +/- 3%.

The Proposed Project caused none of the 70 modeled years to result in a greater than 10% change (relative to the existing condition) in Delta outflow during the months of February through June (see table, below). In fact, the 10% threshold utilized by USFWS was never exceeded during any month for the 70 modeled years. In addition, the maximum upstream movement of X2 during the February through June period for any individual month was 0.2 km, representing a maximum change of 0.3%, far below the 10% threshold. Finally, the Proposed Project did not result in a difference in the export/import (E/I) ratio of 10% relative to the existing condition in any year for the February through June period.

Comparison of Proposed Project to Existing Condition (Baseline)

	Number of Years with a Difference in Delta Outflow of 10% or more	Number of Years with a Difference in Delta Outflow of 3% or more	Maximum Upstream Movement for any Individual Month (out of 70 years) of X2 (km)	Maximum Percent Change in Upstream Movement of X2	Number of Years with a Difference in E/I Ratio of 10% or more
February	0	0	0.1	0.2%	0
March	0	0	0.2	0.3%	0
April	0	0	0.1	0.2%	0
May	0	0	0.1	0.2%	0
June	0	0	0.2	0.3%	0

The impacts on Delta resources were deemed less than significant in the American River Pump Station Project DEIS/EIR data analysis. The USFWS criteria utilized in the *Central Valley Project Improvement Act Draft Programmatic EIS* (1997), the *CALFED Bay-Delta Program Programmatic EIS/EIR* (1998), and the *Trinity River Mainstem Fishery Restoration Draft EIS/EIR* (1999) further substantiates the significance criteria outlined in the American River Pump Station Project Draft EIS/EIR and the conclusion of less-than-significant impact. Therefore, overall impacts to Delta fish populations would be less than significant.